THE CLAIMS

What is claimed is:

1.   A method for writing data to a disk drive, the disk drive having at least one disk and a head for writing data to each disk, and each disk having at least one data track, the method comprising steps of:

positioning a head over a selected data track of a selected disk of the disk drive, the selected data track having a first predetermined number of physical sectors;

writing a second predetermined number of data blocks of a data stream to corresponding physical sectors of the selected data track using a variable-index writing technique when the head encounters each physical sector and when the physical sector is not defective, a size of a data block equaling a size of a physical sector;

skipping a physical sector of the selected data track when the physical sector is defective;

skipping a third predetermined number of physical sectors of the selected data track when all data blocks of data stream have been written to the selected data track, the third predetermined number of skipped physical sectors of the selected data track equaling the first predetermined number of physical sectors minus a sum of the second predetermined number of data blocks plus the number of skipped defective physical sectors of the data track.

2.   The method according to claim 1, wherein the step of skipping the third predetermined number of physical sectors includes a step of writing at least one error correction information data block as a part of the second predetermined number of data blocks.

3.   The method according to claim 2, wherein at least one error correction information data block is sequentially prior to a first spare data block.

4.   The method according to claim 2, wherein at least one error correction data block is

sequentially after a last spare data block.

5.   The method according to claim 1, wherein at least one disk of the disk drive has a plurality of data tracks each having the first predetermined number of data sectors,

the method further comprising a step of organizing the data stream into at least one data cluster, each data cluster having a size that is equal to a size of an integer multiple of the first predetermined number of physical sectors, a portion of each data cluster corresponding to a single data track and including the second predetermined number of data blocks,

wherein the step of writing the second predetermined number of data blocks writes the second predetermined number of data blocks of a selected portion of a selected data cluster to corresponding physical sectors of the selected data track using a variable-index writing technique when the head encounters each physical sector and when the physical sector is not defective, and

.   wherein the step of skipping the third predetermined number of physical sectors skips the third predetermined number of physical sectors when all data blocks of the selected portion of the selected data cluster have been written to the selected data track.

6.   The method according to claim 5, wherein each portion of a data cluster corresponding to a single data track further includes at least one error correction information data block, and

wherein the step of skipping the third predetermined number of physical sectors includes a step of writing each error correction information data block of a data cluster to a physical sector allocated as a spare sector.

7.   The method according to claim 5, wherein the size of a selected data cluster is greater than a size of a single data track,

wherein the step of writing the second predetermined number of data blocks writes the second predetermined number of data blocks of a selected portion of the selected data cluster to

corresponding physical sectors of the selected data track using a variable-index writing technique when the head encounters each physical sector of the selected data track and when the physical sector is not defective,

the method further comprising steps of:

positioning the head over a second selected data track having a first predetermined number of physical sectors;

writing the second predetermined number of data blocks of a second selected portion of the selected cluster to corresponding physical sectors of the second selected data track using a variable-index writing technique when the head encounters each physical sector and when the physical sector is not defective;

skipping a physical sector of the second selected data track when the physical sector is defective;

skipping a fourth predetermined number of physical sectors of the second selected data track when all data blocks of the second selected portion of the selected data cluster have been written to the second selected data track, the fourth predetermined number of skipped physical sectors of the second selected data track equaling the first predetermined number of physical sectors minus a sum of the second predetermined number of data blocks plus the number of skipped defective physical sectors of the second data track.

8.   The method according to claim 5, wherein each portion of a data cluster corresponding to a single data track further includes a fourth predetermined number of error correction information data blocks, and

wherein the step of skipping the third predetermined number of physical sectors includes a step of writing at least one error correction information data block to a physical sector corresponding to a spare sector.

9.   The method according to claim 8, wherein at least one error correction information

data block corresponds to a first spare data block.

10. The method according to claim 8, wherein at least one error correction data block corresponds to a last spare data block.

11. The method according to claim 1, further comprising a step of determining whether a physical sector is defective is based on information contained in metadata that is associated with the selected data track.

12. The method according to claim 11, wherein the metadata that is associated with the selected data track includes information relating to at least one of a number of physical sectors of the selected track, a number of parity sectors on the selected track, and a number of spare sectors on the selected track

13. The method according to claim 11, wherein the metadata that is associated with the selected data track includes information relating to at least one of a stream handle of the data stream, whether the selected track is free or occupied, a starting sector for the selected data track with respect to a physical start of the selected track, and locations of all of the defective sectors on the selected track.

14. A disk drive, comprising:
at least one disk, each disk having at least one data track and each data track having a first predetermined number of physical sectors; and
a head writing a second predetermined number of data blocks of a data stream to corresponding physical sectors of the selected data track using a variable-index writing technique when the head encounters each physical sector and when the physical sector is not defective, a size of a data block equaling a size of a physical sector, the head skipping a physical sector of the selected

data track when the physical sector is defective, and skipping a third predetermined number of physical sectors of the selected data track when all data blocks of data stream have been written to the selected data track, the third predetermined number of skipped physical sectors of the selected data track equaling the first predetermined number of physical sectors minus a sum of the second predetermined number of data blocks plus the number of skipped defective physical sectors of the data track.

15.   The disk drive according to claim 14, wherein when the head skips the third predetermined number of physical sectors, the head further writes at least one error correction information data block as a part of the second predetermined number of data blocks.

16.   The disk drive according to claim 15, wherein at least one error correction information data block is sequentially prior to a first spare data block.

17.   The disk drive according to claim 15, wherein at least one error correction data block is sequentially after a last spare data block.

18.   The disk drive according to claim 14, wherein at least one disk of the disk drive has a plurality of data tracks each having the first predetermined number of data sectors,

wherein the data stream is organized into at least one data cluster, each data cluster having a size that is equal to a size of an integer multiple of the first predetermined number of physical sectors, a portion of each data cluster corresponding to a single data track and including the second predetermined number of data blocks, and

wherein the head writes the second predetermined number of data blocks of a selected portion of a selected data cluster to corresponding physical sectors of the selected data track using a variable-index writing technique when the head encounters each physical sector and when the physical sector is not defective, and the head skips the third predetermined number of physical sectors when all

data blocks of the selected portion of the selected data cluster have been written to the selected data track.

19. The disk drive according to claim 18, wherein each portion of a data cluster corresponding to a single data track further includes at least one error correction information data block, and

wherein the head writes each error correction information data block of a data cluster to a physical sector allocated as a spare sector.

20. The disk drive according to claim 18, wherein the size of a selected data cluster is greater than a size of a single data track,

wherein the head writes the second predetermined number of data blocks of a selected portion of the selected data cluster to corresponding physical sectors of the selected data track using a variable-index writing technique when the head encounters each physical sector of the selected data track and when the physical sector is not defective,

wherein the head is positioned over a second selected data track having a first predetermined number of physical sectors and writes the second predetermined number of data blocks of a second selected portion of the selected cluster to corresponding physical sectors of the second selected data track using a variable-index writing technique when the head encounters each physical sector and when the physical sector is not defective, skips a physical sector of the second selected data track when the physical sector is defective and skips a fourth predetermined number of physical sectors of the second selected data track when all data blocks of the second selected portion of the selected data cluster have been written to the second selected data track, the fourth predetermined number of skipped physical sectors of the second selected data track equaling the first predetermined number of physical sectors minus a sum of the second predetermined number of data blocks plus the number of skipped defective physical sectors of the second data track.

21.   The disk drive according to claim 18, wherein each portion of a data cluster corresponding to a single data track further includes a fourth predetermined number of error correction information data blocks, and

wherein the head writes at least one error correction information data block to a physical sector corresponding to a spare sector.

22.   The disk drive according to claim 21, wherein at least one error correction information data block corresponds to a first spare data block.

23.   The disk drive according to claim 21, wherein at least one error correction data block corresponds to a last spare data block.

24.   The disk drive according to claim 14, wherein information relating to whether a physical sector is defective is contained in metadata that is associated with the selected data track.

25.   The disk drive according to claim 24, wherein the metadata that is associated with the selected data track includes information relating to at least one of a number of physical sectors of the selected track, a number of parity sectors on the selected track, and a number of spare sectors on the selected track

26.   The disk drive according to claim 24, wherein the metadata that is associated with the selected data track includes information relating to at least one of a stream handle of the data stream, whether the selected track is free or occupied, a starting sector for the selected data track with respect to a physical start of the selected track, and locations of all of the defective sectors on the selected track.